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NORMAL DISTORTION OF THE PELVIS.

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It has always been taken for granted that the two sides of the human pelvis are equal and symmetrical, or, if varying slightly from perfect symmetry, that such distortion is merely accidental and takes place indifferently towards either side. I shall endeavor, in the following paper, to show reasons for questioning the truth of this assumption, and to demonstrate the existence in a majority of cases of a slight but appreciable distortion towards the left side. I shall also attempt to trace the influence of this deformity on the mechanism of head presentation in labor.

I hold in my hand a table of original measurements of 41 pelvises—21 male and 20 female. It comprises all the pelvises which I have thus far had the opportunity of examining, and not merely a class of selected cases chosen with a view to manifest the special point of investigation. Some of the specimens, as will be seen, show very slight deformity in any respect, while others show obvious distortion to the right. Taking the average, however, of the whole number of cases, the following general conclusions are made evident.

First. That the symphysis pubis, as a rule, is twisted over towards the left side. The mode of taking this measurement was as follows:—Set the pelvis on a table, its back against a wall; take a carpenter's square, or right-angled triangle used by draughtsmen, place it against the wall as near horizontally as possible, and describe a perpendicular through the middle point of the promontory towards the symphysis. The distance of the symphysis from this line gives the amount of deviation. The average amount of deviation on

the whole number of cases was between  $\frac{1}{4}$  and  $\frac{1}{2}$  of an inch towards the left. The greatest deviation was  $\frac{1}{2}$  an inch, the least  $\frac{1}{4}$ ; that is,  $\frac{1}{2}$  of an inch towards the right side. The average deviation of the male pelvis was  $\frac{1}{4}$  of an inch; of the female  $\frac{1}{2}$ , a trifle less.

Second. The left acetabulum, or rather that portion of the ilio-pectineal line corresponding to it, measured from the middle of the sacral promontory, presents also an average leftward deviation of  $\frac{1}{4}$  of an inch, the greatest being  $\frac{1}{2}$  and the least  $\frac{1}{4}$ . The average distortion was, as before, greater in the male pelvis, viz.,  $\frac{1}{4}$ , and in the female  $\frac{1}{2}$  of an inch. This measurement shows clearly an excess of capacity in the left half of the pelvic cavity.

Third. The left oblique diameter, or that measured from the right sacro-iliac joint to the left pubic ramus, shows an average excess over the right of  $\frac{1}{4}$  of an inch; the greatest being  $\frac{1}{2}$ , the smallest  $\frac{1}{4}$ . The average of the male pelvis was  $\frac{1}{4}$ , of the female  $\frac{1}{2}$ , the preponderance again being in favor of the male.

Lastly. The left anterior superior spinous process of the ilium, measured from the right sacro-iliac joint, is  $\frac{1}{4}$  of an inch farther than the right anterior superior spinous process of the ilium from the left sacro-iliac joint. The greatest deviation was  $\frac{1}{2}$  of an inch, the smallest  $\frac{1}{4}$ ; the average of the male pelvis was  $\frac{1}{4}$ , of the female  $\frac{1}{2}$  of an inch. The greatest distortion here being in the female pelvis. This measurement shows an increased capacity of the cavity of the false pelvis on the left side.

One more peculiarity remains to be noticed. It is a twisting of the sacral and lumbar portions of the spinal column towards the right in a direction opposite to that of the ossa innominata, so that the lumbar convexity of the spine, instead of looking directly forwards, turns slightly towards the right ramus of the pubes. The sacrum is also slightly twisted on its own axis, as can be seen usually by the eye. I regret that I have not recorded

particularly the proportion of cases in which this distortion was conspicuous, as my attention was not fully fixed upon it until after I had commenced my series of measurements. I am confident in saying, however, that it is quite generally present, and in its effects as well as its causes forming part and parcel with the deformities enumerated above.

To recapitulate. The symphysis pubis is twisted over towards the left side, while the upper portions of the sacrum and lumbar vertebrae are oppositely twisted towards the right; the left side of the cavity and brim are more hollowed out, lengthening the sacro-acetabular distance and left oblique diameter, causing the left ilio-pectineal line to describe a deeper curve than the right, and generally increasing the amount of space on the left side the median line. In the upper cavity, or false pelvis, the space is similarly increased by the greater flaring out of the left ilium and the bending over of the spinal column towards the right. It will be seen that the general features of the deformity resemble those of oblique distortion from disease described by obstetrical writers and exhibited in most pathological collections. The normal is a miniature of the abnormal.

The cause of this deformity, as it appeared to me, is the preferred use of the right leg in standing and walking. It is an effort of nature to throw the weight of the body into line with the right hip. It will be recollected that the three parts of the os innominatum, the ilium, ischium and pubis, unite together at the acetabulum, and that this union remains cartilaginous until the 16th or 17th year of age; it follows, therefore, that during the early period of life, whenever the weight of the body is thrown onto the right leg, a tendency arises to press in the right acetabulum, and with it the whole side of the pelvis, towards the sacrum; while the sacrum itself (whose bony union is still more tardy than that of the acetabulum, commencing about the 18th and ending about the 25th year), and with it the superincumbent lumbar portion of the spine, rotates on its axis and bends over towards the right, so as to bring the centre of gravity still more nearly over the right hip. This explanation is confirmed by the fact exhibited in the table that the sacro-acetabular measurements present a greater disparity than any of the other distances, viz.,  $\frac{1}{4}$  of an inch. The same is true in cases of diseased pelves.

This theory explains why the male pelves are more distorted than the female. If the

bony union of the parts took place during childhood, when the habits and exercises of the two sexes are more nearly alike, we should expect to find a reasonable uniformity in the measurements. Puberty, however, stepping in and creating for the female an entirely new law of pelvic development, changing also the active, romping habits of girlhood for the more staid and dignified movements of woman, interrupts the action of those purely mechanical causes which in the young man continue in operation, with even augmented force, during the whole period of ossification. Hence the reason for that slight but unequivocal excess of deformity in the case of the male pelvis.

It remains to consider the effect of lateral distortion on the position of the foetus in utero. The theory may be briefly stated as follows:—The left side of the pelvic cavities, both false and true, being larger than the right, the vertex of the child's head as it gradually settles into position towards the close of pregnancy, naturally descends into the left side, while the face, rotating in that direction where it finds most room, turns towards the left sacro-iliac symphysis. This embraces from two-thirds to three-fourths of all cases of head presentation.

If, however, the face in descending accidentally gets down on the wrong side the vertebral column, the regular rotation to the right is prevented and the vertex rotates, thus forming the second class, or vertex right presentations. In these cases, owing to the left oblique diameter being slightly longer than the right, the vertex is more apt to turn backwards towards the sacro-iliac junction. Many writers, following Naegelé, consider this position as the regular one, which I question. The confiction of authorities at any rate shows it to be less regular than the first.

Another cause of vertex right presentation may be right lateral distortion.

I desire to notice one more fact in corroboration of the preceding views. It is that the uterus itself in pregnancy is normally distorted towards the left, owing, as I conceive, to the distorted pelvis impressing its own shape upon it. It was first observed, I think, by Wigand, author of the *Geburt des Menschen*, that the left side of the abdomen in its lower portion was naturally more prominent in pregnant females than the right, forming a bulging or bag-like prominence above the left groin, the os uteri at the same time being drawn over towards the left side; the

fundus inclines to the right. These statements are confirmed by German authorities, though not mentioned or only vaguely hinted at by our own writers. I believe no explanation of the phenomenon has been hitherto attempted.

To conclude. Although the figures given are far too few to establish satisfactorily the truth of the views suggested, I think they go far enough to show, as premised at the outset, the *probable* existence of left distortion in a majority of cases as a definite anatomical feature. As to the supposed influence of the deformity in causing the vertex to present by preference on the left side of the pelvis, it is offered simply as a theory. I regret sincerely the unavoidable causes which have prevented me from making the investigation more complete.

TABLE.

The following figures give the amount of deviation towards the left in fractions of an inch. The minus sign indicates deviation towards the right. The lines of measurement made use of are explained in the text.

MALES.				
	Symphysis pubis.	Acetabulum.	Oblique Diameter.	Ant. sup. sp. of illum.
1	$\frac{3}{8}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{1}{2}$
2	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$
3	$\frac{1}{2}$	$\frac{3}{8}$	0	$\frac{1}{2}$
4	$\frac{1}{2}$	0	0	0
5	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{3}{8}$	$\frac{1}{2}$
6	0	$-\frac{1}{8}$	$\frac{1}{2}$	0
7	0	$\frac{1}{2}$	$\frac{1}{2}$	0
8	$\frac{1}{2}$	$\frac{3}{8}$	$\frac{1}{2}$	0
9	0	0	$\frac{1}{2}$	$-\frac{1}{2}$
10	0	0	0	$-\frac{1}{2}$
11	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	0
12	$\frac{1}{2}$	0	$\frac{1}{2}$	$\frac{1}{2}$
13	0	$\frac{3}{8}$	$\frac{1}{2}$	0
14	$\frac{3}{8}$	$\frac{1}{2}$	0	$-\frac{1}{2}$
15	0	$-\frac{1}{8}$	$-\frac{1}{8}$	0
16	0	0	0	0
17	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	0
18	$\frac{1}{2}$	$\frac{1}{2}$	$-\frac{1}{2}$	$\frac{1}{2}$
19	$\frac{1}{2}$	0	$\frac{1}{2}$	0
20	0	0	$\frac{1}{2}$	0
21	$\frac{1}{2}$	0	$\frac{1}{2}$	0
Ave- rage.	$\frac{1}{2}$	$\frac{1}{8}$	$\frac{1}{2}$	$\frac{1}{16}$

FEMALES.				
	Symphysis pubis.	Acetabulum.	Oblique diameter.	Ant. sup. sp. of illum.
1	$\frac{3}{8}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{1}{2}$
2	$\frac{1}{2}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{1}{2}$
3	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$
4	0	$-\frac{1}{2}$	$-\frac{1}{2}$	$-\frac{1}{2}$
5	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$
6	$\frac{1}{2}$	0	0	$\frac{1}{2}$
7	$\frac{1}{2}$	$\frac{1}{2}$	0	0
8	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	0
9	0	$-\frac{1}{2}$	$-\frac{1}{2}$	$-\frac{1}{2}$
10	$-\frac{1}{2}$	$-\frac{1}{2}$	$-\frac{1}{2}$	$-\frac{1}{2}$
11	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{3}{8}$
12	0	0	$\frac{1}{2}$	$-\frac{1}{2}$
13	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$
14	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{3}{8}$	$\frac{1}{2}$
15	0	$-\frac{1}{2}$	0	0
16	$-\frac{1}{2}$	0	$-\frac{1}{2}$	$-\frac{1}{2}$
17	$\frac{1}{2}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{1}{2}$
18	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$
19	0	$\frac{1}{2}$	$-\frac{1}{2}$	$\frac{3}{8}$
20	0	$\frac{1}{2}$	0	$\frac{1}{2}$
Ave- rage.	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$
General ave- rage.	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$

## OBSERVATIONS UPON OVER-WORK AND STRAIN OF THE HEART.

By J. B. TREADWELL, M.D. Harv.

Read before the Massachusetts Medical Society, at the Annual Meeting, 1872.

(Concluded from page 160.)

## Relative frequency of different Forms of Lesion.

In every one of these 150 cases we satisfied ourselves that the heart had suffered sufficiently from structural and organic changes to produce a derangement of its mechanical functions. Of the pathology of these changes I shall speak further on; at present we have simply to consider their results as they presented themselves to our observation on an average of about eight years from the time that their presence first became apparent. The normal mechanism of the heart had suffered as follows:

Cases of mitral regurgitation, 51  
" " " " " with 32  
aortic obstruction,

Cases of mitral regurgitation, with aortic regurgitation,

Cases of mitral regurgitation, with aortic regurgitation and obstruction,

Cases of aortic regurgitation, " " obstruction,

" " tricuspid regurgitation,

" " aortic obstruction and regurgitation,

Cases of mitral regurgitation, with tricuspid regurgitation,

Cases of double mitral and double aortic,

Cases of double mitral,

I wish here to remark that in every one of the above cases in which mitral trouble is not mentioned as being present, there was more or less *systolic roughness* at the mitral orifice; and in many of them a very decided approach to a well-marked murmur—sufficient at least to show that some structural change had taken place at this orifice. Of course we make no claim to perfection or absolute accuracy of diagnosis in many cases, but at the same time we have felt that in each of the 150 cases above detailed we had sufficient evidence to enable us to arrive at a correct diagnosis in respect to the particular lesion or lesions in every case. These different lesions existed in various degrees of severity in the different cases, but in all were unmistakably present as above recorded.

The general condition of the men was also, of course, very varied, and dependent to some extent, though by no means wholly so, upon the severity of the cardiac lesions. Many of them are able to perform light manual labor to a certain extent; none to do any heavy work whatever, while some, and by no means a few, became almost breathless upon any bodily exertion whatever.

There is one condition or symptom which, in the extreme degree in which it presents itself, is almost peculiar to hearts of this kind. I refer to a most pronounced, universal and distressing irritability of the organ. Such a heart seems to have been deprived of all governing power, and upon the slightest provocation becomes tumultuous and irregular in its action, and is consequently the source and seat of the most positive and relentless annoyance and distress to its possessor.

Mr. Myers alludes to this condition, and says that it is particularly common among very young soldiers, and also states that in connection with it he has always found the sphygmograph to indicate diastolic, more or less marked. He further says that Ma-

rey and Naumann consider that this diastolic is, in a measure, due to the recoil of the blood against the closed aortic valves. It has been supposed that this irritability is due to hypertrophy, but this supposition seems to me to be at variance with the results of every-day observation. An hypertrophied heart, independently of other lesions, is not necessarily or even frequently an irritable one; indeed I should say that this would be very seldom the case, unless there was obstructive disease to account for the hypertrophy, which those who maintain the existence of the latter deny. While hypertrophy of muscular tissue does not increase its irritability to any extent, a weakened condition does so increase it to a very great degree. Particularly is this the case in respect to the involuntary muscular tissue. A strong muscle is, as it were—if I may be allowed the expression—self-reliant, self-sufficient, and consequently self-controlled, and being called upon to perform certain work, does it easily, steadily, and quietly, without violent or spasmodic effort, simply because it is sufficiently powerful to overcome the resistance opposed to it; while a weak muscle, being insufficient in power to meet the demands made upon it, immediately becomes rapid, irregular and spasmodic in its action, simply because it is weak and incompetent to overcome the force opposing it. The slow, regular and labored but certain and decisive beat of an hypertrophied heart, and the quick, spasmodic, irregular and inefficient action of that of the class under consideration, are two very different things. In the latter there is no hypertrophy proper, and very seldom any of a compensatory character. These cases differ from those of hypertrophy in nearly every symptom, physical and rational. The tones of the heart, its beat, sounds, rhythm and impulse are distinctly different from those of an hypertrophied heart, as is also the pulse and the general condition of the patient. If these hearts were hypertrophied simply from over-exercise in consequence of increased obstruction in the circulation—systemic and pulmonary—we should expect to find the hypertrophy uniform, the sounds those of a strong heart rather than those of a weak one, and absence of valvular lesions or mechanical disturbance; and we should also expect the hypertrophy to diminish upon the cessation of the exciting cause, in the same manner as any muscle, enlarged from extra work, resumes its former bulk upon being relieved from such extra work. Not one, however, of these conditions, obtains in these cases.



Every symptom, early and late, is indicative of weakness. My opinion, in regard to the cause of this irritability, founded long since, and I am glad to find the same opinion entertained by Mr. Myers, whose book I had not seen until a day or two since, is that it is due to a certain debility of the heart, accompanied by, and the cause of dilatation of its cavities, with none or very little compensatory hypertrophy. I am of the opinion that there is always dilatation in hearts of this class, and that it is the result of over-work of the organ already weakened and debilitated from various causes, and that compensatory hypertrophy is seldom present, even in cases in which aortic obstruction has supervened. But to this I shall presently allude again.

Vertigo is a very prominent, constant and oftentimes distressing symptom, in some forms at least of this group of heart diseases. It is present to a greater or less degree in almost every case, but in what particular form, if any one, more than others, of the local structural changes, I am not yet fully satisfied.

More than a score of cases have come to our observation in which men have been pensioned for alleged gun-shot wounds or other injuries of the head, in which there was not the slightest evidence of any such wound or other injury sufficient to cause any head symptoms. The man is disabled, and rightly attributes his disability to service, and in the absence of any knowledge of its real nature and with this too well realized and almost constant head symptom, he naturally looks to the head for its origin.

So obvious is it that he is disabled from some cause, that if he has had the merest scratch of the scalp, or if a cicatrix, no matter how small or how problematical its origin, can be found, and in some cases if not, he is pensioned for "wound" or "injury" of the head, and the heart, the real and only seat of the disability, is overlooked. I mention this to show how common these forms of cardiac lesion are, and how little attention they have attracted, even from medical men.

I wish to refer incidentally to a particular form of these cardiac affections, comprising a class of cases which have almost universally been regarded as cases of sun-stroke, and to which much of the difference of opinion, and much of the discussion as to the proper treatment of sun-stroke has been due. A man making severe bodily exertion, his respiratory movements hampered perhaps by constricting clothing, belts, cross-belts, knapsack-straps, and perhaps

exposed to the solar rays, but quite as likely not, and perhaps, as is sometimes the case, cut off from the free access of air, feels unconscious or semi-conscious, his pulse scarcely perceptible at the wrist, the heart fluttering and its sounds indistinct and weak, the lungs filled with mucous râles, and the extremities relaxed, without (so far as I have seen) any spasmodic movements, is said to have suffered from sun-stroke, or as some of the British writers put it, with apparently some conception of its real nature, "the cardiac variety of sun-stroke," when, in fact, it is no sun-stroke at all, in the commonly received acceptance of the term, but simply a giving out of the heart's action, and this not from deficient nervous supply to the heart, nor any abnormal condition of the brain primarily, but simply from primary and inherent debility of the muscular tissue of the heart, which has become so weak and dilated from severe and sudden or prolonged bodily exertion, or other causes, that it fails to respond to the nervous stimulus, the brain fails to receive an adequate supply of blood, and the man faints; or perhaps the heart, weak and distended, is incapable of forcing the blood along, the pulmonary circulation is impeded, and there is a general venous congestion, in which the brain partakes, and the man becomes more or less comatose. It would be needless, had I the time, to compare these symptoms with those of true sun-stroke; a thought is sufficient to make manifest the difference between the two conditions, and of course the treatment appropriate for the one is as far remote from that proper for the other as the widest range of therapeutics. The subsequent courses, sequelæ and results of these two conditions are none the less diverse; one man returns to consciousness readily, with a weak and probably permanently disabled heart, and sound brain; the other slowly, if at all, with a good chance for cerebral inflammation, but at all events with a permanently damaged brain. Had I space, I could, from personal observation, give scores of cases illustrative of these remarks, but I forbear. I have mentioned this form of cardiac over-strain as peculiarly illustrative in its sudden onset and rapid development, of precisely what occurs, pathologically speaking, more slowly in a larger number of cases subjected to similar etiological conditions, it being sufficiently apparent in these acute cases, so to speak, that the heart having been already over-taxed and its cavities more or less dilated, and being subjected to a sudden or somewhat prolonged and inordinate strain

necessary to carry on the circulation, becomes still more distended, and finally, for the time being, incapable of efficient contraction.

I think there can be no doubt that the primary lesion, in this general class of heart affections, is ventricular dilatation, generally of the left side, in consequence of the greater amount of obstruction existing in the systemic circulation, from structural debility or weakness of the heart, and that from this primary lesion arise those of a secondary nature, which consist mostly of derangements of the valvular mechanism. Before considering these in detail, however, I shall refer briefly to the opinions of the writers before named, upon the general pathology of these cases.

Prof. Gairdner states that dilatation occurs frequently with auriculo-ventricular murmurs, without primary disease of the valves.—“A murmur caused by auriculo-ventricular regurgitation, mitral or tricuspid, is at least as frequent an indication of considerable dilatation of the corresponding ventricle as any other of its physical signs; and further, in cases where such a murmur does not occur, or is not observed, auriculo-ventricular regurgitation is frequently present, and plays a most important part among the sequelæ of dilatation.”

I have italicized the latter part of the paragraph in order to direct attention to the common, but I believe erroneous impression, that a genuine murmur must always accompany regurgitation; but such is not the fact. In a weak and debilitated heart a large part of the blood contained in the ventricle at any given time, may be forced backward during its systole, without any murmur proper at all; the retrograde current may be present, but the obstruction to its course may be so slight, or the contraction of the ventricle so weak, or both, that nothing like a murmur, in the common acceptance of the term, will be produced, the presence or absence of a murmur being dependent upon the size, and particularly the character, of the orifice, rather than upon the simple fact of regurgitation.

Dr. Bristowe refers to these dilated hearts as follows:—“A class of cases in which, with a history of cardiac disease, and with clinical proofs of mitral incompetence, the mitral valve and the orifice which it protects, are found to present a healthy appearance; and in which, without any obvious cause, a certain amount of dilatation and hypertrophy of the muscular tissue are found to co-exist.”

Speaking of the post mortem appearances

in these cases, Prof. Gairdner says:—“The state of the heart in most of these cases, has been nearly similar; there have been dilated ventricles, somewhat dilated orifices, stretched and enlarged valves, and not unfrequently a more or less thickened state of their edges, or of the tendinous cords. The degree and kind of the thickening has usually been such as to constitute, in my view, a wide distinction between these cases and those of primary valvular deformity, although I have often seen physicians of considerable experience assume the valvular thickening to be the cause of the hypertrophy, and thus invert, in my opinion, the whole pathology of the case.”

Dr. Bristowe says that in all of his cases there was found “marked and considerable dilatation, with active or relative thinness of the ventricular wall.”

The same writer, in referring to a certain case of this class, says:—“Mitral regurgitation had existed, and to this the symptoms and death were attributable, although no organic mischief was discoverable in the valve itself.” And in another case, which proved fatal, and in which a mitral regurgitant murmur had existed for a long time before death, in seeking an explanation of its origin he says:—“It is probably not to be found in mere dilatation of the orifice itself; it still more certainly could not be explained by anything in the state of the valve. It appeared to me, therefore, that the condition of the ventricle itself, apart from that of the orifice, and of the valve, was sufficient to account for regurgitation through the auriculo-ventricular orifice.”

Dr. Allbutt says,—“These cases have well-marked characters, unlike other forms of heart disease, or those arising from other causes—a natural and distinct group.” And he further says,—“Mitral incompetency may and does result from over-distention of the left ventricle.” And again,—“For my part I am satisfied that by sheer stretching of the chambers, the auriculo-ventricular valves become imperfect. Aortic incompetency may take place as a primary or as a consecutive event.”

Dr. Allbutt places the structural changes in the following order,—“Firstly, dilatation of the right heart; secondly, dilatation of the left heart; thirdly, *in reason*,”—the italics are my own,—“if not in time, hypertrophy of the left ventricle, or of both ventricles,” etc. It will be seen that Dr. Allbutt’s knowledge of hypertrophy, in these cases, is merely a theoretical one—“*in reason*.”

Both he and Mr. Myers place considera-

ble stress upon the presence of a certain amount of hypertrophy, both primary and consecutive, but the preponderance of evidence is decidedly against them; theoretically we might expect to find hypertrophy, but clinically we do not, except of a consecutive character, and then only to a slight degree, in a very few exceptional cases. Increased area of dullness is the only symptom in any way indicating its presence as a primary lesion, but this, as everyone knows, is equally indicative of simple dilatation, and to this condition, as the initial lesion, every other symptom present, rational and physical, points clearly and exclusively.

Nearly all of the writers quoted place mitral regurgitation as one of the earliest of the consecutive lesions, and this certainly coincides perfectly with the results of my observation. It is also, without any question, the consequence of the antecedent ventricular dilatation. Thus, Dr. Bristowe gives it as his opinion, that "the lateral displacement of the origin of the musculi papillares, in consequence of the rounded form which dilatation imparts to the heart, causes a disproportion between the size of the ventricular cavities and the length of the chordæ tendinæ, and prevents the closure of the auriculo-ventricular valves," or, in other words, the ventricular cavities being dilated, and their walls bulged, the chordæ tendinæ become too short to allow the perfect closure of the valves, holding them open, so to speak.

That this is the most frequent lesion, our own cases furnish abundant proof. In 51 of the 151 cases, this mitral incompetence was the only valvular lesion present, while it occurred in connection with other valvular lesions in 72 more, or 123 in all. In all of these cases it was well marked, and, as I stated before, it probably existed to some degree in nearly every one of the remaining 27 cases.

Tricuspid regurgitation is comparatively rare, in consequence, I think, of the vastly less amount of obstruction existing in the pulmonary circulation, when compared with the systemic.

It appears evident, then, I think, that the initial lesion, in these cases, is ventricular dilatation. Whence does it originate? I answer from an inherent debility of the muscular structure of the heart, which renders that organ incapable of performing any amount of extra labor, or of overcoming any unusual obstruction to the circulation, so that when such extra labor is thrown upon it, its muscular structure being already too weak and debilitated to acquire a condition

of hypertrophy, gives way and relaxes still more, and ventricular dilatation results. Dr. Bristowe says that this form of dilatation is "the result of weakness of its (the heart's) muscular tissue." But debility of the heart, however excessive, will not be followed by distention, provided that the duties which that organ is called upon to perform are adjusted to its capabilities. This is shown in the course of exhausting diseases, as cancer and phthisis. "A small degree of feebleness, however, in a heart which is called upon to act beyond its strength, will soon succeed in producing greater or less dilatation."

This writer instances "too laborious occupation as one cause," and further remarks,—"Extreme feebleness and atrophy of involuntary muscular tissue may occur without any apparent structural change of the ultimate fibres, and there can be no doubt that the muscular tissue of the heart is thus affected. Unnatural thinning is virtual weakness, and if dilatation and thinning may have been produced by any temporary impairment of the ultimate tissues of the heart, these conditions are liable, not only to continue, but even to progress after the ultimate fibres have recovered their natural state."

He also remarks that the progressive character of these changes would be vastly more likely to continue and progress in the case of continued operation of the exciting cause than in cases where such cause had ceased to act.

Dr. Allbutt remarks that "whether the dilatation appears alone or with hypertrophy depends upon several conditions. If the heart is naturally a feeble one, or if it is not robust naturally, or from insufficient nourishment, or previous disease, or if the lungs have been hampered in their movements, dilatation will be found at the onset."

Here he virtually admits that in the class of cases which we are considering, dilatation is the primary lesion, and it is natural to suppose that if under favorable conditions the heart possesses sufficient inherent tone and power to recover itself, it will be by recovery from its dilated condition, through returning power and contractility of its muscular tissue, rather than by any considerable increase of tissue above its original amount; in other words, there is no reason for the muscular structure under these conditions to increase to a point beyond its original bulk, unless obstructive disease be present. The same conditions which would favor a restoration of the natural tone and power of the muscular tissue, would also, by this means, provide for the recovery of

the organ from its dilated condition, without hypertrophy, a condition which, in the absence of obstruction, there is nothing to produce. But in the greater number of cases by far, the muscular tissue is so debilitated that the dilatation continues, and without compensatory hypertrophy, and, according to Dr. Allbutt, fibrous degeneration of the muscular tissue ultimately ensues. In such cases he finds "only indistinct striation, which in places may be so entirely absent that the tissue presents the appearance of common white fibre—such fibres cannot have a normal contracting power."

But, to quote no further, we have seen that in these cases we have hearts naturally weak, dilated from excessive bodily exertion, with mitral incompetence as a sequence, generally in persons less than 25 years of age, in whom the muscular tissues have not attained perfect maturity of vigor; and this accounts for the exceeding frequency of this class of affections among amateur oarsmen, nearly all of whom, after having had hard practice for a season or two, as far as I have had opportunity to observe, have suffered to some extent in this way.

To follow out the other morbid valvular manifestations, the result of the same or consecutive changes, I have not space. A moment's consideration will make evident the way in which each of them is produced. I wish simply to add that, as the result of my observation of many of these cases during the past eight or ten years, I am of the opinion that, for the most part, after they have reached a certain stage, these affections progress but slowly, providing that the conditions under which the person is placed be of a favorable character, with of course a total removal of those causes which in the first instance were productive of the trouble. If the surroundings or habits of the person be bad, and particularly if manual labor be pursued to any extent, the progress is more rapid, and of course the general condition of the person becomes worse in a corresponding degree. A few, with naturally stronger hearts, may partially recover, providing they be placed under favorable conditions, and that the lesions have not become very severe.

These affections are of every day occurrence, and these disjointed and incomplete observations are respectfully offered with a view, should they be considered worthy of the object, of inciting inquiry and observation in respect to this most common and interesting class of cardiac lesions.

Boston, June, 1872.

## Progress in Medicine.

### REPORT ON ANATOMY.

By THOMAS DWIGHT, Jr., M.D. Harv.

(Concluded from page 169.)

#### MYOLOGY.

In the last number of the *Jour. Anat. and Phys.* (May, 1872), Prof. Humphry made a valuable contribution to anatomy, by a paper "on the disposition of muscles in vertebrate animals," and on June 17th he delivered the first of three lectures on "human myology," (reported in full in the *Brit. Med. Journ.*), at the Royal College of Surgeons. The paper begins as follows:—"The locomotory system of a vertebrate animal consists fundamentally of a successional series of alternating transverse skeletal and muscular planes, which extend nearly through the outer wall of the animal." The "skeletal" parts are not necessarily of bone or cartilage, but may be fibrous. A fish's tail is a typical example of this arrangement. Prof. Humphry then explains very clearly the series of changes by which the muscles and fasciæ attain the complicated forms which they present in higher animals. He divides the dorsal muscles, (which in higher animals include only the deeper layers), into two classes: 1st, those which connect corresponding parts, as *inter-transversales*, etc., and 2d, those which run obliquely, as from transverse to spinous processes, etc. In the lectures it is recommended to substitute for "the misleading term *sacro-lumbalis* the far better one *ilio-costalis*, used by German anatomists." This would be a great improvement. Let anyone compare the description of the *erector spinæ*, in the last edition of Quain's *Anatomy*, with that in Henle's *Muskellehre*, and he cannot but be struck with the greater simplicity of the latter. According to Henle the muscle consists of the *ilio-costalis* in three parts, *lumborum*, *dorsi* and *ce. viciis*, respectively, and of the *longissimus dorsi*, which is continued as the *l. cervicis* and *l. capitis*. The confusing names *musculus accessorius*, *cervicalis ascendens*, *transversalis cervicis* and *trachelo-mastoid* are happily dispensed with. Prof. Humphry discusses the action of the human intercostal muscles, and concludes that they are all inspiratory, and that there is no antagonism between the different parts of the series. To return to general principles, the author finds that "the muscles of any division of a limb consist usually of three layers: First, and deepest, are the

fibres of the segment itself, the intrinsic fibres; of these the proximal series are the bundles passing from the girdle to the first segment of the limb; *secondly*, the fibres derived from the distal segments, the extrinsic fibres; and *thirdly*, and most superficially, the fibres derived from the ventral muscle, the superficial ventro-appendicular fibres." The paper appears to us of great value, for by looking at muscles as arranged according to a general plan, it may be possible to give them an interest in which they are otherwise deficient.

#### VASCULAR SYSTEM.

Prof. Braune describes the effect of moving the leg in certain ways on the blood in the femoral vein, in the *Proc. Roy. Soc. Sciences, Leipzig*, 1870, *heft* 3 and 4. If the leg be rotated outward and carried backward so as to extend it as much as possible, the vein falls together, but fills again and becomes prominent when the leg is brought forward and the thigh flexed on the body. This can be studied both on the living and dead subject. Braune thinks that the bones, muscles, fasciæ and veins in the leg, but particularly about Poupert's ligament, form a suction apparatus, which is further assisted, during life, by the contraction and relaxation of the muscles.

#### LYMPHATIC SYSTEM.

Bruce, on Structure of Tendon; *Quart. Jour. Micro. Sci.*, April, 1872. Boll, on the same, in *Schulze's Archiv*, vol. 7, *heft* 4, and in *Centralblatt*, No. 47, 1871. Review of the question in *Quart. Journ. Micro. Sci.*, April, 1872. Klein and Sanderson on the anatomy of serous membranes, in the same No. of last. Ranvier on histology and physiology of nerves, *Part 2d*, in *Archiv de Physiol.* July, 1872. Renaut, on the mucous tissue of umbilical cord, in the same, for March, 1872. Wedl, histological communications, in *Proc. Imp. Acad. Sci., Vienna*, Oct., 1871. Obersteiner on some lymphatic spaces in the brain, in the same for Jan., 1870. Wagstaffe, on the perivascular system of the brain, in *St. Thomas's Hospital Reports*, 1872. Ludwig and Schweigger-Seidel. The lymphatics of the fasciæ and tendons. *Leipzig*, 1872. The existence of passages for the lymph has been demonstrated almost universally throughout the body, but there is still much to be learned as to their nature and relations. There is a great diversity of opinion among observers and, no doubt, considerable diversity of arrangement in different parts. The structure of connective tissue is, evidently, a

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very important part of the question, and will be taken first.

Ranvier, published in the *Archiv. de Physiol.*, (1869), some observations on the tails of young rats, which lead him to believe in the existence of cylinders, formed of quadrilateral cells, rolled in such a manner as to bring the opposite sides of each cell into contact. This paper occasioned much discussion, and gave rise to many others. Dr. Bruce does not get the same results, but finds cells arranged in stripes, and folded over a fibrillar bundle running in the same direction. He finds more cells in young than in adult animals, and that in the former, the greater diameter of each cell is transverse. Boll sees a line running through the middle of continuous cells, which he calls the "elastic stripe." According to some it is a fold, and to others an optical delusion. Ranvier, in his latest paper on nerves, treats of the connective tissue, and thinks he has found lymph spaces, but without definite walls, between the fibrous elements which hold the nervous ones together. He says, "I have not yet succeeded in demonstrating the communication between the intra-fascicular connective tissue, and the lymphatic vessels, but it is very probable that this tissue is no exception. The presence of lymphatic cells, beside the flat cells, between the bundles of fibres indicates, indeed, that it is the seat of a lymphatic circulation; but, I repeat, the channels of circulation are still to find." Renaut finds no lymphatic canals, such as Köster claims to have injected, in the mucous tissue of the umbilical cord, but only spaces in the connective tissue, with occasional flattened cells in the walls. On the other hand Ludwig and Schweigger-Seidel claim regularly formed vessels for the fasciæ and tendons.

Many years ago Robin discovered spaces around the vessels of the brain, which have been further studied by His and others, some of whom have found communications between them and the lymphatics. The latest writer on the subject is Mr. Wagstaffe, who agrees with His in denying that there is any connection between the walls of the blood vessel and those of the space in which it lies. Roth and Obersteiner find radiating fibres crossing the space from one wall to the other. Wagstaffe has seen in these spaces corpuscles which very much resemble lymphatic ones, but which he prefers to consider modified epithelial cells. He finds "evidence of a direct communication between the perivascular canals in the substance of the organ and the subarach-



noid spaces, and of the latter with the perivascular system and lymph spaces of the membranes." Obersteiner goes further, and demonstrates passages from the perivascular canals to the free spaces (held to be lymph spaces), around ganglion cells. In these latter he has found bodies similar to those seen by Wagstaffe, but which he does not hesitate to call lymph corpuscles, and we think correctly. He has been able to inject the spaces around the cells from beneath the pia mater. Similar spaces are to be seen around the cells and vessels of the spinal cord; His, however, denies that there is any communication between them. The reporter has lately studied these relations in the cord; though unable to find any unquestionable instance of such a connection, he has seen it very strongly suggested by offshoots from the pericellular spaces, which passed out of the plane of the section, when apparently about to open into the perivascular canals.

Wedl has lately written on the lymphatics of the spleen, of the capsule of the liver and of the heart. The most interesting point is that in no case has he been able to find, though using very fine injections, a free opening of a lymphatic into a serous cavity. In the spleen of a horse he followed some lymphatics, injected from the capsule, for one centimetre into the substance of that organ. He finds no lymphatics in the endocardium of man, horse or sheep, though they have been found in that of the calf. Dr. Klein and Prof. Sanderson give an excellent account of these vessels in the tendinous centre of the diaphragm. Those of each side are divided into two sets—an anterior and a posterior—which communicate freely with the corresponding systems of the opposite side. Those of the same side are joined together by longitudinal vessels giving off perpendicular ones, which open by *true mouths* into the abdominal cavity. These results are obtained by "natural" injections, which were described under the head of "Methods," while Wedl used only artificial ones; it is easy to see that the course of the fluid is not the same in the two cases, as in the former it passes from the serous cavity, and in the latter towards it, and it is possible that this may have something to do with Wedl's non-discovery of free openings (stomata.)

#### NERVOUS SYSTEM.

That part of Henle's Anatomy devoted to the central nervous system, and papers on the brain and spinal cord in *Stricker's Handbook*, by Meynert and Gerlack respec-

tively, have appeared during the last two years. The last of these writers is the only one whose work can be called other than very hard to follow; it is clear and thorough. Meynert's paper is the most valuable, but unfortunately the most difficult. Before one can do justice to this paper he must not only have a pretty good knowledge of the subject, but also have mastered the style and manner of thought of the author. Difficult as are the details, the general diagrammatic sketch which he gives of the central nervous system is clear enough, and if kept in mind aids the student in the individual parts. The idea is that intelligence is situated in the gray matter of the convolutions, and that the impressions of the outer world are thrown upon this expanded layer of nervous elements, as the image of a landscape is thrown upon the retina; but the conducting nerves, instead of going directly to their destination like the rays of light, break the journey occasionally at certain masses of gray matter situated like railway stations at the junction of different lines. Meynert calls the conducting fibres the "projecting system," and divides the groups of cells into four categories:—1st, that of the convolutions of the cerebrum; 2d, gray masses situated in the substance of the brain; 3d, the gray matter along the central cavity of the brain and spinal cord; and, 4th, the cells of the cerebellum. Leaving the cerebellum out of the question, there are, then, three classes of "projecting fibres" connecting respectively, the first division of gray matter with the second, the second with the third, and, as nerves, the third with the different parts of the body. There is also the "associating system" of fibres, and possibly of nerve cells, by which different parts of the brain are brought into communication.

Medullated nerve fibres have long been known to present occasional constrictions, but these have never attracted much attention, it apparently being tacitly admitted that they were accidental appearances. Ranvier, in the *Archiv. de Physiol.*, March, 1872, gives the results of some observations on this subject, which, if confirmed, will be of great importance. He has examined nerves of the kind in question, treated with carmine, osmic acid and nitrate of silver, as well as in the fresh tissues, and finds that the constrictions are at regular intervals and nearer to one another in small than in large nerves. They are caused by the bending in of the sheath so as to reach the axis cylinder and entirely to divide

the white substance of Schwann. A very important point is that there is one nucleus in the sheath between every two constrictions, and that in growing nerves the spaces regularly enlarge. Ranvier finds thickenings of the axis-cylinder in the neighborhood of the constrictions, which serve, as he thinks, to make the separation more perfect. The transverse lines which nitrate of silver shows in the axis cylinder appear best marked at the constricted points.

We find the following statement of Beale's view on nerves in the *Monthly Microscopical Journal*, April, 1872:—"With regard to the nerve fibrils themselves, many (I believe all) are unquestionably compound, consisting of still finer fibrils, which are arranged according to the same plan as the nerve fibres in the larger trunks."

The relations and modes of termination of minute nerves have of late been the subjects of an interesting discussion between Dr. Lionel Beale, the representative (perhaps we should say the founder) of the English school of histology, and Dr. Klein, formerly of Vienna, but now of London, who worthily represents the German observers. The former does not believe that nerves end in cells, much less in their nuclei, nor in contact with the contractile tissue of voluntary muscle, which fact Klein attributes chiefly to the imperfection of his method of preparation. Beale adheres to carmine as a coloring agent, and his results are certainly magnificent; but it does not appear to show such fine nerve fibres as the chloride of gold. The termination of the nerves in the cornea and their relations to the corneal corpuscles are two of the most mooted points bearing on this question. The nerves have been held by some to join the processes of the corpuscles, and by others to have no connection with them. Rollet (*On the Cornea, in Stricker's Handbook*) is of the latter opinion; and Klein, in his article on the distribution of non-medullated nerve fibres in the *Quarterly Journal of Microscopical Science* (October, 1871), describes a net-work of fine nerves on the corpuscles. Lipmann, in *Virchow's Archiv*, vol. xxviii. p. 218, describes nerves going to the nuclei of the corpuscles, but no one else appears to have been fortunate enough to find them. The reporter, in a paper on the use of chloride of gold, published in this *JOURNAL*, May 27th, 1869, and re-printed in the *Monthly Microscopical Journal*, July 1869, stated that he had found but one undoubted case of union of a fibre and a process of a corneal corpuscle, and that then the nature of the fibre

was not certain. Since then he has repeatedly studied the subject, and is convinced that such connections occasionally occur, but is not prepared to maintain that such is the universal, nor even the usual arrangement.

Dr. Klein gives drawings of a deep and a superficial intra-epithelial nervous network in the cornea in the *Month. Micro. Journ.*, April, 1872.

For the literature, *vide* most of the English microscopical journals, for this year, and for some account of the discussion, the September number of the *Amer. Naturalist*.

Rindfleisch describes in *Schultze's Archiv*, Vol. 8, heft 3, the termination of the nerves in the cortical substance of the brain. The axis-cylinder becomes naked, and, growing smaller, breaks up into a bundle of very minute fibrillæ, which at last appear to be mere strings of granules. The branched processes of the ganglion cells end in the same way.

#### VISCERA.

*Kidney*.—Two new valuable papers on this organ have lately appeared. The first by Dr. Seng, in the *Proc. Imp. Acad. Sci. Vienna*, Oct., 1871, is a report of some very conclusive observations on the epithelium of the Malpighian corpuscles. It is held that these bodies are formed by a coil of capillaries pressing against the blind end of the convoluted uriniferous tubule till the latter is reflected like a sack over the former. If this be true there must, originally at least, be two layers of epithelium facing one another but yet continuous, owing to the folding of the wall of the tubule. As an illustration suppose that the end of the finger of a glove be pushed in for a short distance, the object pushing it will represent the blood vessel—the *glomerulus*—and the lining of the glove, reflected over, will correspond to the epithelium. Observers, however, have not been able to find the relations of the epithelium, as they ought to be, according to this view. Some did not find the cells on the glomerulus, and others, finding these, were still unable to trace the connection between the layers. Seng, being unable to demonstrate the latter point on the kidneys of adult men and animals, turned to the human fetus of from four to nine months, and succeeded in showing the relations as we should expect to find them. The drawings, by Heitzmann, are admirable and convincing. The other work is an elaborate and beautifully illustrated paper "On the pelvis of the kidney in man and mammals," by Prof. Hyrtl, in the *Memoirs of the Vienna Acad.* for 1872.

It is based on the study of corrosion preparations of the kidneys, of all the orders of mammalia, (except Sirenia). We consider here only the part relating to human anatomy, though the other is, we think, decidedly the better. In spite of the great diversity of form, Hyrtl thinks that human kidneys may be divided into three classes. The *first* has no pelvis; the ureter divides as it approaches the kidney into two branches, without any enlargement at the point of division. The *second* kind has a true pelvis, the ureter dividing with an enlargement at or within the *hilus*. The *third* kind has half a pelvis; in this case the ureter divides unequally, one part enlarging sufficiently to form a pelvis, while the other does not. Hyrtl also divides the *calices* into greater and lesser, and the latter into those of the first and second class. It appears to us that the distinction between a pelvis and a calyx is quite arbitrary, and that the classification of the different kinds of kidneys is unnecessary. The author describes two cases of diverticula from the renal pelvis, and concludes with some remarks on the arteries.

*Spleen.*—The nature of the channels through which the arterial blood reaches the veins in this organ is still undecided. Wedl, in his "histological communications," *Proc. Acad. Vienna*, Oct., 1871, expresses the opinion that, beside the capillary system, there are direct communications between small arteries and veins. He does not believe in the existence of vascular spaces without regular walls.

*The nerves, bloodvessels and lymphatics of the mucous membrane of the larynx*, by Dr. Boldyrew, in *Schultze's Archiv.*, Vol. 7, p. 166. The author describes a nervous network, forming nearly regular figures, immediately below the subepithelial layer, and sending upward terminal fibres, to end in the areolar tissue, either with a small swelling or in a nucleated granular mass. He finds no ganglion cells, and is unable to determine whether any nerves end in the epithelial layer.

There are three layers of bloodvessels, except on the epiglottis. The deepest of these is of coarse vessels, forming a polygonal network, which communicates with the middle layer by vessels which run obliquely, while the middle is joined by perpendicular vessels to the very fine subepithelial network. These three layers are quite distinct. The author has seen offshoots from the deep lymphatic vessels run obliquely to the subepithelial layer of bloodvessels, and end there in cul de sacs.

A description of the nerves of the oral cavity will be found in the same volume, p. 238.

In the *Lancet* (April 13th, 1872), there is an abstract of an article from the *Centralblatt*, by Rindfleisch, on a well marked layer of muscular fibres in the lungs, forming sphincters where the bronchi join the infundibula, and sending both looped and circular fibres over the latter.

*The organ of taste.*—Dr. Von Ajtai, in *Schultze's Archiv.*, Vol. 8, *heft* 3. A new form of papilla called *foliata* was described some time ago as present in the tongues of some animals, but the author of this paper is the first who has found any analogous structure in man. He describes transverse folds crossing the posterior two-thirds of the human tongue, and becoming less prominent as they approach the front part. In these he finds cells of the same kind as are found in the human *papillae circumvallatae* and in the *foliatae* of the rabbit. He also mentions some peculiar forms of epithelial cells, which he has found in these elevations.

"Contributions to the knowledge of the glands in the walls of the intestine and particularly Brunner's glands" is the title of an exhaustive article, by Schwalbe, in *Schultze's Archiv.*, Vol. 8, *heft* 1. It treats of the finest points in the structure and arrangements of the cells, the *membrana propria*, the lymph vessels, etc., in the greatest detail.

Friedinger discusses the question as to which cells in the pepsine glands contain the pepsine, in the *Proc. Acad., Vienna*, Oct., 1871, and settles it in favor of the old "digestive" cells (*Labzellen*) against certain others lately discovered differing from the former in shape and in their behavior to coloring fluids.

Dr. Max Huss shows in his inaugural thesis, published in the *Journal of Jena*, Vol. 7, *heft* 2, 1872, that, in mode of development, the human mammary glands are very different from those of the ruminant. This called out a valuable paper (in the same number), by Gegenbaur, on the development of the nipple in mammalia.

"Some remarks on the anatomy of the human placenta." *Journ. Anat. and Phys.*, May, 1872. Dr. Hicks in this paper describes the appearances of several placentae examined *in situ*, in which he usually found no blood between the villi. The author begins by stating that "The fact that blood has been found among the villi in placenta after their expulsion from the uterus in labor, has given great weight to

the theory of a placental sinus-system." He says little in the way of comment, concluding by the observation that the condition which he found "is a far more difficult thing to comprehend, if blood naturally be there, than to understand how it is so frequently there in the naturally expelled placenta, supposing blood be ordinarily absent.

The anatomy of the eye and ear is left to the reporters on those subjects.

#### MISCELLANEOUS.

*Histology of Synovial Membranes.*—Dr. Albert, in the *Proc. Vienna Acad.*, (Oct. 1871), endeavors to show that the synovial membrane in a joint does not cover the interarticular ligaments any more than it does the cartilage, and further, that there is no epithelial lining to the joint. The drawings show appearances which are too wonderfully like epithelium to be anything else. The author admits the resemblance, but states that the appearances vary very much in different parts of the joint. We do not well see that this makes the existence of epithelium improbable, in at least some parts of the cavity. This article is well written, and an important contribution to the literature of the subject.

*The Structure of the Cell-Nucleus* has been studied by Dr. Eimer, who publishes his results in *Schultze's Archiv.*, Vol. 8, *heft* 1. He found almost invariably in cells of various kinds that the clear space which often surrounds the nucleolus is bounded by a layer of granules, separating it from the darker outer part of the nucleus. When the nucleus does not present a clear space near the middle, it is still divided into two parts by this granular layer. When there are two nucleoli in one nucleus, this structure is to be found around each.

Analysis of the *gasses of the blood*, by Estor and St. Pierre, in *Robin's Journ.*, March and April, 1872. The authors after comparing different apparatus and modes of procedure, show that by adding hot water to blood and boiling, more oxygen can be found than by boiling the blood alone. or by adding the hot water without boiling.

*Pflüger's Archiv.*, Vol. 5, *heft* 2 and 3, 1872, contains a paper, by Dr. Treskin, on the chemical constituents of the testicle.

NOTE.—It is proposed that these Reports should appear semi-annually. Writers of anatomical papers will greatly aid the reporter by sending him copies addressed to this JOURNAL.

T. D. JR.

## Medical and Surgical Journal.

BOSTON: THURSDAY, SEPTEMBER 12, 1872.

#### THE HARVARD MEDICAL SCHOOL.

In the JOURNAL for August 15th we spoke of the success of the new plan of instruction in the Medical School of Harvard University and of the cordial reception it had met with from the profession and such students as had become acquainted with its working. At the same time, we stated that the number of students had materially diminished, but assured our readers that this would not "kill the school," and added "we know too well the material of which its officers are made up: and more than that we know the material of which the medical profession is made. The Faculty means work, the Medical Profession means work, and, though there are croakers everywhere, the medical profession will back the Faculty."

We have reason to believe that, in using this language, we gave the impression that there had been an unexpected loss of students and that pluck and determination were to take the place of that pecuniary support upon which medical schools generally depend. If any such impression were given, we wish farther to state that the diminution in numbers was less than was anticipated and that the pecuniary results were eminently satisfactory. The income from the smaller number of students exceeded the estimates of those who had advocated and inaugurated the change, and nearly equalled that derived from the largest number of students ever connected with the school under the old plan in any single year.

We may perhaps be asked how this is compatible with a deficit about which so much was said at the last meeting of the Massachusetts Medical Society. The explanation is simple. A large part of the so-called deficit was the result of the enlargement of the building, rendered necessary by the change in the plan of instruction and the more liberal consequent expendi-

ture. To these must be added the cost of a lot of land purchased to secure the College against the erection of some structure which might prove very injurious.

The remainder represents a fraction of the amount appropriated for the payment of the salaries of the instructors. The latter were based upon the probable receipts of the school, which were intentionally exceeded, with the hope that the requisite amount would be made up from other sources. The actual deficit from this cause was not more than one-half of that which was expected.

We were, therefore, justified in speaking as we did of the present and prospective success of the new scheme, which meets with the approbation of all true students.

### From British Journals.

USES OF CHLORIDE OF AMMONIUM.—Dr. Dwar (*Brit. Med. Jour.* July 27, 1872,) states that this article has not been employed internally as much as its usefulness would seem to indicate. It is a valuable diaphoretic and diuretic. It seems to have a special action on the serous membranes generally. He has found it of especial value in pleuritic effusions, particularly when their cause is of a subacute or chronic character.

In a case of hydrothorax, where the effusion was very abundant, absorption of the fluid rapidly took place under the use of the drug. Other similar cases are reported. It is necessary to give adults twenty or thirty grains every three or four hours. Its precise *modus operandi* has not been clearly ascertained. Although primarily not a stimulant, it may act on serous membranes by stimulating their power of absorption. Its diaphoretic action may account for its usefulness in muscular rheumatism, in which affection the author has employed it with much satisfaction. He has not found it of much use in lumbago or articular rheumatism. Some bitter infusion is the best vehicle for disguising its taste.

G.

SLEEPING TO DEATH.—The *British Medical Journal* (Aug. 10, 1872,) refers to the singular and always fatal lethargic disease

(*lethargus*) occasionally observed to be prevalent among the negroes of West Africa.

Dr. T. H. Bailey, who has observed it there, but who is not able, more than others have been, to explain its pathology, describes it briefly as follows: It is one of the curiosities of medicine. As the name implies, the principal and, in fact, only symptom that presents itself is lethargy, and one case is essentially a stereotype of all. The patient, usually a male adult, is seized without any premonitory symptom, with a sensation of drowsiness, which continues rapidly to increase, in spite of all efforts to throw it off, until he sinks into a profound and seemingly natural sleep. This continues for about twenty-one days, when death takes place. Throughout the course of the disease, the patient preserves a quiet and peaceful countenance, may be easily aroused for a short time, will take nourishment, and generally answer a few questions in a perfectly rational manner. The pulse, respiration and temperature, remain normal throughout; the pupil is neither dilated nor contracted to any noticeable extent, and the urine and feces are voided with comparative regularity. With the exception of the abnormal tendency to sleep, nothing exists to denote disease." Many careful *post-mortem* examinations have been made by competent men, but nothing of an abnormal character has been found. Dr. Smith, colonial surgeon at Freetown, says that every remedy that could possibly be of any avail had been used, without any apparent beneficial effect. They sleep on and glide into eternity, in spite of professional skill.

G.

ACTION OF ALCOHOL.—In his Lectures on the Treatment of Fever, Dr. Lionel S. Beale gives the following summary of the local and general action of alcohol (*Med. Times and Gazette*, July 27, 1872):—

1. "In external wounds and in internal diseases where alcohol acts beneficially, the good result is, in part at least, due to the alcohol checking the increased action already established.

"2. Alcohol does not act as a food; it does not nourish tissues. It may diminish waste by altering the consistence and chemical properties of fluids and solids. It cuts short the life of rapidly growing bioplasm, or causes it to live more slowly, and thus tends to cause a diseased texture,



in which vital changes are abnormally active, to return to its normal and much less active condition.

"3. In 'exhausting' diseases, alcohol seems to act partly by diminishing very rapidly the abnormally increased growth of bioplasm. The quantity required will depend upon the extent to which the changes alluded to have proceeded. In extreme cases, half an ounce of brandy, or even more, may be given for a time (in some cases even for several days) every half-hour; and there is reason to believe that in desperate cases life is sometimes saved by this treatment.

"*Practical Conclusions.*—Lastly, I shall venture to repeat here the conclusions I arrived at many years ago concerning the great value of the alcoholic treatment of low fevers and inflammations. Increased experience has afforded further confirmation of the correctness of the statements made in the paragraphs below. I do not, of course, refer to slight cases of fever, pneumonia, &c., in which no stimulant whatever may be required, but to *very severe cases of disease only.*

"1. In what appeared hopeless cases, as much brandy as the patient could be made to swallow (an ounce and a half to two ounces in an hour) has been given for several hours in succession, and then as much as thirty ounces a day for several days, not only without producing the slightest intoxication, vomiting or headache, but the treatment has been followed by recovery.

"2. I would adduce the fact that a man not accustomed to drink, when suffering from acute rheumatism, complicated with pericarditis with effusion, pneumonia at the base of one lung, and pleurisy on the opposite side, has taken twenty-four ounces of brandy a day for eleven days, the tongue being moist and the mind calm during the whole time. While under this treatment, inflammatory products were absorbed, and the general state of the patient much improved.

"4. I have been compelled to give a very weak child, weighing less than four stone, twelve ounces of brandy a day for ten days, while suffering from acute rheumatism, with pericarditis and effusion. This quantity did not produce the slightest tendency to intoxication, or exert other than a favorable effect upon the disease. The patient did not begin to improve until the quantity of brandy, gradually increased, had reached the amount stated.

"4. I would state that among the gene-

ral conclusions I have reached, after carefully watching more than one hundred cases of acute disease treated with large quantities of stimulants, are the following: That intoxication is not produced; that delirium, if it has occurred, ceases, or is prevented from occurring at all in the course of the case; that headache is not occasioned; that the action of the skin, kidneys, and bowels goes on freely; that the tongue remains moist, or, if dry and brown, often becomes moist; that the pulse falls in frequency and increases in force; that respiration is not impeded, but that, where even one entire lung is hepatized, the distress of breathing is not increased, and it appears that the respiratory changes go on under the disadvantageous circumstances present as well as if no alcohol had been given.

"The conclusion from all this is, most certainly, that alcohol does not do harm in fevers and acute inflammations; that it does not produce intoxication in persons suffering from exhausting diseases, and that large quantities (from twelve to thirty ounces) may be given in cases which appear very unlikely to recover, and sometimes the patient will be saved. The conviction is forced upon the observer that, in desperate cases, these large quantities of alcohol are directly instrumental in saving life, not by *exciting or stimulating to increased action, but by moderating actions already excessive*, and at the same time by causing the heart to contract more vigorously, and so continue to drive the blood through the impeded capillaries." G.

DEATH FROM THE ADMINISTRATION OF CHLOROFORM.—We regret to record another death from the administration of chloroform, which took place at the Great Northern Hospital on Wednesday. The patient was a man 53 years of age, on whom Mr. Carr Jackson was about to perform the operation of lithotomy. The vapor was administered by Mr. George Eastes, the chloroformist of the hospital, who has had extensive experience in anaesthetics. Mr. Osman Vincent, Mr. Vernon and Mr. Bloxam, all experienced chloroformists, were present; but the efforts of all were unavailing in restoring the unfortunate man to consciousness.—*Brit. Med. Jour.*

UREA IN BILE.—Popp finds that urea is a constant constituent of bile. The bile of the pig seems to contain it in larger quantity than that of the ox.

## Medical Miscellany.

A "REGULAR" ADVERTISEMENT.—The Michigan State Medical Society, at its recent session, enacted the following:—

"Resolved, That the State Medical Society of Michigan hereby adopts as one of its standing rules, that all members of this Society are strictly prohibited from advertising in any way except to the following extent, viz.:—

"JOHN DOE, M.D.,

"PHYSICIAN AND SURGEON,

"[Or, Oculist and Aurist, or other specialty,]

"Office, No. —, — Street."

"Anything more than this will subject the offender to the penalty of expulsion from the Society. All members who are recognized as specialists, and who advertise themselves in accordance with the preceding rules will not be permitted under such an advertisement to engage in general practice."

THE MICHIGAN MEDICAL SOCIETY admits female practitioners to its membership.

DR. SCHOEPPE, whose trial and conviction for murder two years ago brought him to the foot of the gallows, and caused much excitement at the time, has just had a second trial, and has been acquitted on the ground of insufficient evidence. The medical evidence at the first trial was especially faulty.

At the recent graduation ceremonies at the close of the summer session of the University of Edinburgh, a bust of the late Prof. Syme was presented to the University.

HEALTH DEPARTMENT OF NEW YORK.—At a meeting of the Board of Health, held July 31st, the services of forty-three physicians, forming the Auxillary Corps of Assistant Health Inspectors, were dispensed with, at the recommendation of the Acting City Sanitary Inspector—there being no further necessity for their services, as smallpox has been stamped out (!).

CRANIOTOMY UNDER DIFFICULTIES.—The Melbourne correspondent of the *Medical Times and Gazette* gives the details of a peculiar case:—A medical man named Jackson, residing in one of the thinly populated districts in the West, where a practitioner has to ride probably thirty or forty miles to see half-a-dozen patients, attended a case of midwifery in March last, and had to perform craniotomy. There was nothing remarkable in the case beyond the fact that the head had become impacted; turning was not practicable, and the woman was rapidly becoming exhausted. But, being many miles from his residence, and having no instruments with him, he did the best he could with such instruments as he could extemporize. With a chisel, a gimlet, an auger, and

a hook made out of a piece of telegraph-wire, he delivered the woman successfully, and she recovered without the least bad effect after. But two rival practitioners of base-minded proclivities actually set on the woman's husband to move the coroner to hold an inquest on the remains of the child, and so worked upon the prejudices of the people in the district that the jury returned a verdict of manslaughter against Mr. Jackson, and he has been committed for trial, notwithstanding the most favorable representations on the part of the medical society of which he is a member.—*N. Y. Med. Jour.*

A NEW MEDICAL BARONET.—It is announced in Dublin that Dr. William Stokes, Regius Professor of Physic in Trinity College, Dublin, and Physician to the Queen in Ireland, is about to receive a baronetcy. Dr. Stokes is the acknowledged head of the profession in Ireland.—*British Medical Journal.*

BOOKS RECEIVED.—The Principles and Practice of Surgery. By Frank Hastings Hamilton, A.M., M.D., LL.D., &c. Illustrated. New York: William Wood & Co. 1872. (From the Publishers.)—Lectures on Diseases of the Liver. By T. O. Habershon, M.D. Lond., F.R.C.P., &c. Philadelphia: Lindsay & Blakiston. (From the Publishers.)—On Winter Cough, Catarrh, Bronchitis, Emphysema, Asthma. A Course of Lectures by Horace Dobell, M.D. New Edition. Philadelphia: Lindsay & Blakiston. 1872. (From the Publishers.)

DIED.—In South Boston, 6th inst., Stephen Mighill, M.D., aged 51 years.

Deaths in seventeen Cities and Towns of Massachusetts, for the week ending August 31, 1872.

Cities and Towns.	No. of Deaths.	Taunton
Newburyport	12	6
Boston	172	Somerville
Charlestown	21	Haverhill
Worcester	30	Holyoke
Lowell	28	9
Milford	3	426
Chelsea	11	
Cambridge	34	
Salem	21	
Lawrence	25	
Springfield	14	
Lynn	17	
Fitchburg	5	

### Prevalent Diseases.

Cholera Infantum	136
Consumption	53
Dysentery & Diarrhoea	26
Typhoid Fever	19

Three deaths from smallpox occurred in Boston.

GEORGE DERRY, M.D.,  
Secretary of State Board of Health.

DEATHS IN BOSTON for the week ending Saturday, September 7, 169. Males, 88; females, 81. Accident, 8 abscess, 2—apoplexy, 3—asthma, 2—inflammation of the bowels, 2—bronchitis, 2—inflammation of the brain, 2—disease of the brain, 4—burned, 1—cancer, 3—cerebro-spinal meningitis, 1—cholera infantum, 35—cholera morbus, 2—consumption, 27—convulsions, 2—croup, 2—debility, 4—diarrhoea, 8—dropsy, 1—dropsy of brain, 2—drowned, 1—dysentery, 2—epilepsy, 1—scarlet fever, 1—typhoid fever, 3—bilious fever, 1—gastritis, 2—disease of the heart, 1—infantile, 1—insanity, 1—disease of the kidneys, 1—disease of the liver, 2—congestion of the lungs, 1—inflammation of the lungs, 5—marasmus, 15—paralysis, 2—peritonitis, 1—puerperal disease, 2—scalded, 1—smallpox, 4—suicide, 1—tetanus, 1—teething, 1—unknown, 2.

Under 5 years of age, 87—between 5 and 20 years, 9—between 20 and 40 years, 34—between 40 and 60 years, 21—above 60 years, 18. Born in the United States, 121—Ireland, 28—other places, 20.